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This chapter explores the role of self-assessment in the development of professional identity formation within student pharmacists.

Developing a Self-Assessment Instrument to Evaluate Practice-Readiness Among Student Pharmacists

Channing R. Ford, Kevin N. Astle, Erika L. Kleppinger, Jeanna Sewell, Amber Hutchison, and Kimberly B. Garza

Health professions education continues to face daunting and never-ending challenges to ensure that graduates are prepared for entry into practice (Noble, McKauge, and Clavarino 2019; Wald 2015). The ever-evolving changes to accreditation standards and the healthcare system, push health professions educators to consistently evaluate the knowledge, skills, and abilities they expect students to achieve within their learning environments (Mylrea, Gupta, and Glass 2019; Wald 2015; Wilson et al. 2013). As a result, health professions educators are expected to be adaptable, integrating these changes in real-time to ensure that their learners are prepared for real-world application. Yet, educators can only provide opportunities for continued learning and professional growth among their students; these same students must also do their part to evaluate their own knowledge, skills, and abilities as they apply them to their roles as the next generation of healthcare practitioners (Dall' Alba 2009).

The intentional evaluation of professional identity formation (PIF) is essential in health professions education to ensure that both our educators and students are actively assessing this development to ensure learners are prepared for entry into practice. Historically, scholars have written a great deal about the complex nature of PIF (Wald 2015; Wilson et al. 2013; Holden et al. 2015); however, there is limited data as to how this formation can be evaluated over time. Therefore, to address this need, members of the faculty within the Harrison School of Pharmacy collaborated with the Director of Assessment to develop a self-assessment instrument that tasks students with evaluating their progression towards a practice-ready pharmacist. This manuscript will describe the development of such an instrument and the validation process that occurred to evaluate the overall applicability of the instrument for use throughout the curriculum.

Role of Professional Identity Formation in Pharmacy Education

Established over time, PIF occurs over multiple stages, shaping and reshaping how one views him or herself within their given profession (Cruess, Cruess, Steinert 2016; Noble, McKauge, and Clavarino 2019; Cruess, Cruess, and Steinert 2019). This development is influenced by internal and external factors which include intentional and coincidental experiences occurring across the individual's life span (Noble, McKauge, and Clavarino 2019). The role of PIF within lifelong learning is essential and ensures that we as individuals continue to evolve and grow as we transition through the various stages of life. Yet, while scholars agree that PIF is essential, there continues to be some debate as to how this development can be accomplished and assessed within the learning environment (Cruess, Cruess, Steinert 2016; Holden et al. 2015).

As a step in addressing this challenge, Cruess, Cruess and Steinert (2016) examined the role of PIF within George Miller's framework, Miller's Pyramid (Miller 1990). Miller's original work established a hierarchical approach to learning and assessment, posing that there are four levels: knows, knows how, shows how, and does. The pyramid structure demonstrates the increased complexity of assessment design with the base being designated as the lowest assessment level of 'knows' with assessment complexity increasing as it approaches the apex with 'does'. These levels require varying assessment approaches, each building in complexity and pushing towards learner autonomy for completing the associated clinical tasks. With the growing recognition of the key role PIF plays within the health professions, Cruess , Cruess, and Steinert (2016) pose an amendment to Miller's framework to include 'is' as the highest level of the pyramid. This new level focuses on identity, pushing the learner one step beyond the established pyramid, assessing students on their ability to demonstrate "the attitudes, values, and behaviors expected of one who has come to 'think, act, and feel like a physician'" (Cruess, Cruess, and Steinert 2016, 181). While conceived by Cruess and colleagues (2016) as a result of their analysis of PIF within medical education, this expectation is applicable to all future healthcare providers as each discipline identifies attitudes, values, and behaviors they expect within the profession. Yet, assessing the 'is' level is complex, as evaluating PIF is subjective and heavily relies on what the individual being assessed strives to adopt within their own identity (Cruess, Cruess, Steinert 2016).

Scholars agree that PIF should be integrated early within a professional program to ensure that students are able to actively develop their professional identity (Noble, McKauge, and Clavarino 2019; Mylrea, Gupta, and Glass 2019). Yet, identifying a systematic and consistent approach for integrating PIF into a health professions curriculum

is daunting as each health profession perceives professional identity differently, with some practitioners within an individual profession disagreeing as to what knowledge, skills, abilities, values, and so forth are expected from a practitioner (Noble, McKauge, and Clavarino 2019; Atkinson et al. 2016). For example, within pharmacy education, a study conducted in Europe by Atkinson and de Paepe (2016) found differences between community pharmacists' and pharmacy academics' expectations for practice. This study showed that community pharmacists focused on competencies tied to patient care while academics focused more on research, technology, and regulatory practices (Atkinson and de Paepe 2016; Noble, McKauge, and Clavarino 2019). To address these potential discrepancies, it is essential that health professions educators collaborate with those in practice to ensure that PIF activities and experiences instill competence, relatedness, and autonomy (Mylrea, Gupta, and Glass 2019).

Professionalism. Often when scholars discuss the role of PIF within the health professions, it is quickly followed by a discussion of the role of professionalism. Historically, scholars have used the terms synonymously, often relying on professionalism to shape learners' professional identity (Cruess, Cruess, and Steinert 2019). PIF and Professionalism are often interwoven as each influences the other and impacts one's view of themselves as a practitioner. Authors Moseley et al. provide an in-depth analysis of the differences in professional identify formation and professionalism in a previous chapter within this special issue.

The integration of professionalism within a curriculum has been a long-standing challenge, with many forgoing integrating the concept and simply expecting students to portray professionalism with limited to no guidance on what that entailed (Cruess, Cruess, Steinert 2016; Hammer et al. 2003). However, as with PIF, this trend has begun to change with educators exploring what professionalism means, how it should be taught within the curriculum, what behaviors are expected, and how they would assess progression (Cruess, Cruess, Steinert 2016; Cruess, Cruess, and Steinert 2019). The authors (2016, 182) propose "that the real objective of teaching professionalism has always been to assist students as they develop their own professional identities" and as such should be a key objective within the learning environment.

Abilities-Based Outcomes and the Practice-Ready Curriculum. In 2013, the Harrison School of Pharmacy (HSOP) initiated the first steps to revising the Doctor of Pharmacy (PharmD) curriculum. This process began with the development of 10 abilities-based outcomes (Wright et al. 2018) which established the Practice-Ready vision that the school would utilize for the development of 270+ competencies that would shape the new Practice-Ready Curriculum (PRC). To assess these competencies, faculty quickly recognized that various

assessment methods would be needed to effectively evaluate a student's progression across the curriculum, including performance-based assessments (PBAs). The term PBA was chosen by the faculty to allow for more creativity and flexibility during the assessment development process. As a result, a variety of assessments were developed to assess student progression including formal objective structured clinical examinations (OSCEs), utilized often in health professions education (Harden 1988; Miller 1990), skills check-offs, written case-based assessments, and recorded demonstrations, to name a few. A detailed description of the development of PBAs within the Harrison School of Pharmacy curriculum has been previously published (Ford and Kleppinger 2020).

Identifying and Addressing a Gap

Performance-Based Assessments. Within the PRC, students complete a number of PBAs during the first three years of the curriculum. These assessments are tied to courses within the curriculum and are developed by content experts in collaboration with a faculty Skills Lab Coordinator and the Director of Assessment. PBAs task students with demonstrating their knowledge, skills, and abilities within a simulated clinical context. Typically completed as a series of stations, students may be asked to demonstrate their ability to navigate within a web-based electronic health record, compound a drug product, interact with a standardized person (SP) who is portraying a patient, caregiver, or provider, or complete a comprehensive assessment to develop a care plan (Ford and Kleppinger 2020). During these encounters, students are assessed on their ability to complete pre-determined skills and, when applicable, are evaluated on their ability to communicate with a SP. Comprised of both an analytical checklist (a specific list of clinical skills students must successfully complete within an assessment) and a communication rubric, these experiences assess a student's ability to apply what they learned in the classroom to a practice-based scenario. For most PBAs, SPs serve as graders for both the analytical checklist and communication rubric.

With the transition to the PRC, a new communication rubric was devised to provide a more comprehensive evaluation of a student's ability to communicate within these PBAs and to allow students to assess their development in these areas over time (Ford et al. 2019). The communication rubric is comprised of seven performance criteria (introduction, appropriate terminology, confidence, patient-centered approach, information delivery, conclusion and professional demeanor) and three performance levels (needs development, satisfactory progress, and achieved) (Ford et al. 2019). SPs were also asked to provide a global evaluation of each student using the following criteria: I would seek out and refer others to this pharmacist, I would accept this pharmacist, and I

would not accept this pharmacist. As this final evaluation was purely subjective, it did not factor into the student's overall grade. SP evaluations of students, both on subjective and objective criteria, give faculty a view of what members of the community value in a practicing pharmacist. After observing these student evaluations over time, members of the PBA development team wanted to gain a better understanding of how the SPs evaluated students within these encounters and what qualities and behaviors they associated with a practicing pharmacist.

SP Survey and Outcomes. In the Spring of 2018, a short, free-response Qualtrics survey was developed to collect the specific qualities and behaviors that SPs associated with each of the performance-levels within the final non-credit criteria ("I would seek out and refer others to this pharmacist", "I would accept this person as my pharmacist", and "I would not want this person to be my pharmacist"). Responses to the survey were anonymous and respondents were not provided any specific guidance as to what should be considered when answering the survey. A total of 55 SPs (61.1% of those invited to participate) provided responses to the survey, of which most had served as an SP for 2 years or less (58.2%). Using the constant comparative method (Kolb, 2012), qualitative data analysis revealed several major themes spanning the three ratings, including professionalism, patient-centered skills, communication, and preparation. Other minor themes identified were professional appearance and demeanor/attitude, verbal and non-verbal communication, empathy, and confidence. While similar themes were identified across all three rating areas, SPs differentiated students based upon their performance in each area, with "I would seek out and refer others to this pharmacist" representing the most favorable ratings.

Development of the Instrument. The results of the open-response survey fostered the development of a self-assessment instrument (Figure 1) which was designed to allow students to evaluate their progression within 14 qualities/behaviors: appearance/hygiene, attentive, caring/empathic, confident, genuine, knowledgeable, organized/time management, personable/positive attitude, person-centered, prepared, presentation/delivery, professional, respectful/polite, and verbal communication (Ford et al, 2021). Each quality and associated behavior description was devised from the feedback provided by the SPs during the initial study. To ensure that what was originally developed in the instrument was representative of these findings, the research team administered a second study implementing a follow-up survey asking SPs to evaluate their agreement with the descriptions of each quality and associated behavior using a 5-point Likert scale (1 = strongly disagree to 5 = strongly agree). Any affiliated behavior description that was ranked 3 or less (neutral to strongly disagree) provided participants the opportunity to provide written feedback outlining what elements were missing from the description that, if added, would warrant

agreement. SPs were then asked to rank the 14 qualities and associated behaviors from 1 (most important) to 14 (least important)This ranking allowed SPs to indicate which attributes were essential and less essential in a practicing pharmacist. The survey instrument was built using Qualtrics survey software, and an invitation to participate was sent to all SPs that included a link to the online survey.

Of the 73 SPs who were invited to participate in the follow-up survey, we received 66 (90.4%) usable responses. Responses from only 51 SPs were included in the ranking task analyses due to missing data. SP respondents were 70% female and the greatest proportion (44%) were age 60-69 years (Table 1). Forty percent reported less than 2 years of service. Results demonstrated that for each of the qualities and behaviors, more than 90% of SPs indicated that they "strongly agreed" or "somewhat agreed" with the qualities and associated behaviors (Table 2). SPs ranked knowledgeable (mean=2.7; SD=2.5) and attentive (mean=3.9; SD=2.0) as most important, and organized/time management (mean=9.5; SD=3.3) and presentation/delivery (mean=11.6; SD=3.2) as least important (Table 3). SPs with less than two years of service ranked presentation/delivery (mean=12.6; SD=2.5) as less important than did SPs with two or more years of service (mean=11.0; SD=3.4). Using the Mann-Whitney U test to compare rankings across groups, this difference was found to be significant (p=.037). Rankings did not differ significantly for any of the other qualities and associated behaviors.

As the self-assessment instrument was developed for students to evaluate their progression towards practice-readiness, the same survey was distributed to faculty within the HSOP asking them to evaluate their level of agreement with each quality and associated behavior. Faculty were also asked to rate their level of agreement with the description of each quality and associated behavior and to rank the 14 qualities and behaviors from 1 (most important) to 14 (least important). Of 71 faculty who were invited to participate, 23 (32.4%) usable responses were received; 60.9% of respondents also served as clinical preceptors. Responses from 22 faculty were included in the ranking task analyses due to missing data. Faculty respondents were 65% female and the greatest proportion (39%) were age 30-39 years (Table 1). Results from the survey found that for each of the qualities and behaviors, more than 80% of faculty indicated that they "strongly agreed" or "somewhat agreed" with their descriptions, with 100% indicating agreement with descriptions of knowledgeable, organized/time management, personable/positive attitude, prepared, professional, respectful/polite, and verbal communication (Table 2). Faculty ranked knowledgeable (mean=3.5; SD=3.2) and caring/empathic (mean=5.1; SD=3.3) as most important, and appearance/hygiene (mean=10.5; SD=4.2) and presentation/delivery (mean=11.0; SD=3.2) as least important.

Comparing rankings between faculty and SPs using the Mann-Whitney U test, faculty rated confident (8.3±2.6 vs. 6.5±3.6, p=.015) and appearance/hygiene (10.5±4.2 vs. 6.8±4.5, p=.001) as less important than did SPs; no other significant differences between faculty and SP ratings were found. Among all respondents across both survey groups, females ranked genuine as more important (5.9±3.0 vs. 7.9±3.1, p=.010) and verbal communication as less important (9.2±3.2 vs. 7.5±3.2, p=.048) compared to males. Respondents age 50 and older ranked appearance/hygiene as more important (7.0±4.6 vs. 10.1±4.6, p=.012), and professional (7.6±4.2 vs. 5.1±4.4, p=.025) and respectful/polite (9.2±3.6 vs. 6.7±3.0, p=.005) as less important compared to respondents younger than 50.

As the final step of the instrument development process, the research team wanted to evaluate the applicability of the instrument at other institutions. To identify a comparable school to our own, all public colleges and universities located in the southeast United States with Colleges or Schools of Pharmacy were considered. Elimination criteria included location and if the college/school was located on a health sciences campus; as a result, the University of Georgia College of Pharmacy was identified as the only comparable site in the region. The anonymous survey was distributed to faculty via publicly available email addresses located on the university website. Of the 71 faculty invited to participate, 9 (12.7%) usable responses were received. Of faculty respondents, 88.9% served as clinical preceptors, 89% were female and the greatest proportion (44%) were age 60-69 years (Table 1). Due to missing data, responses from 8 faculty were included in the analysis of agreement with each quality and associated behavior, and 7 faculty were included in the ranking task analyses. Results from the survey found that for the quality 'person-centered' and its associated behaviors, 88% of faculty indicated that they "strongly agreed" or "somewhat agreed" with its description (Table 2). All 8 (100%) respondents "strongly agreed" or "somewhat agreed" with the remaining qualities and associated behaviors. Lastly, faculty ranked knowledgeable and professional as most important and prepared and presentation/delivery as least important (Table 3).

Linkages between Self-Assessment and PIF

One goal of developing a competent professional is the ability to learn from experiences in order to continue developing over the course of their career. As students develop their professional identity, they must internalize it. Continued self-assessment and reflection are methodologies that can support students as they continue to shape and formalize their professional identify as well as refine their views of professionalism (Holden et el. 2015). By

reflecting on their experiences, students are able to identify areas where learning occurred and where further development is needed. The integration of self-assessments fosters further evaluation by pushing students to evaluate their progression towards their professional goals against a set criteria either outlined within their academic program, profession, or future employer. By participating in these self-assessments, students may be uncomfortable, confused, or feel unsure about their identity. Identifying these feelings allows students to grow further in their PIF (Huyssteen and Bheekie 2015, Cruess, Cruess, Steinert 2016; Cruess, Cruess and Steinert 2019).

By incorporating self-reflection as a part of learning experiences, professional students become more aware of their strengths and weaknesses, allowing them to monitor their own growth and development (Cruess, Cruess, Steinert 2016; Ward 2015; Matthews, Bialocerkowski, and Molineux2019). When students are led through a process of intentional self-assessment, it allows them to be actively involved in their identity formation and monitor their own progress towards the professional identity they hope to achieve (Mann, Gordon, and MacLeod 2007; Cruess, Cruess and Steinert 2019). FacultyTherefore, faculty should be incorporating reflection and self-assessment as part of the learning experience.

Student development of professional identity does not occur at a single point in time but is best accomplished over the course of their time as a professional student. Regular and systematic assessment throughout the learning process is considered the ideal approach as it allows for consistent monitoring (Holden et al. 2015). By framing pharmacists' professional identity in 14 qualities and behaviors, student pharmacists will be able to more clearly focus on how they have changed or progressed in the different areas at different points in time. The implementation of our self-assessment tool will allow students to longitudinally assess their PIF as they develop into a practice-ready pharmacist.

Implementation and Next Steps

To promote PIF, educators must purposefully integrate learning and assessment experiences that task students with evaluating and reevaluating their transition from learner to professional (Cruess, Cruess and Steinert 2019). Yet, to do so in a meaningful manner, students must recognize and accept the qualities and behaviors associated with a professional working within their field. The development of this 14-item self-assessment instrument was intentional as it allowed examination of whether different expectations were present in SPs using pharmacy services in the community from faculty and preceptors that were preparing the next generation of practitioners. The commonality

in expectations supports the devised list of qualities and associated behaviors, as there was clear alignment between the two groups, and should help to reduce dissonance between students' experiences in the classroom and in experiential learning.

As noted above, the integration of purposeful self-reflection is key to empowering student learners to foster their PIF. With the integration of this instrument into key learning experiences focusing on professional identity formation, students will have clearly defined qualities and behaviors in which to evaluate themselves regarding their progress towards the practice-ready pharmacist. Yet, the act of self-assessment is not enough; guided mentorship and feedback is essential to help promote continual growth in these areas (Cruess, Cruess and Steinert 2019; Wald 2015). As such, we recognize that students will continue to need meaningful feedback from faculty and SPs when completing their performance-based assessments.

The inclusion of instruments such as this also strives to integrate a higher level of assessment focusing on the 'is' level within the amended version of Miller's pyramid. In order for students to consistently demonstrate the "attitudes, values, and behaviors expected of one who has come to 'think, act, and feel like'" a pharmacist, students must be placed in scenarios where those expectations must be met (Cruess, Cruess, Steinert 2016, 181).

Next Steps. The instrument will be integrated within the PharmD curriculum in different ways. One mechanism is for student pharmacists to utilize the instrument for self-assessment and to assist in PIF. Student pharmacists will be provided the opportunity to conduct a self-assessment utilizing this instrument at least once each semester. Students will be encouraged to reflect upon their PIF through various learning experiences including in-class role-play scenarios, performance-based assessments, introductory practice experiences, and professional advocacy events. As stated by Cruess, Cruess, and Steinert(2016), it is important to implement different means of assessing professional identity for the varying level of achievement. This instrument will serve as an innovative and novel means of evaluating PIF throughout the PharmD curriculum and will allow students the opportunity to develop their sense of "is" for possessing the qualities and behaviors of practicing pharmacists. When completed appropriately, students will be able to identify opportunities for improvement and can track progression each semester.

In addition to serving as a self-assessment tool, students will be provided the opportunity to share their completed instrument with their faculty mentor. Faculty mentors will be able to assist students in self-reflection and PIF through guiding progression and modeling behaviors of a professional pharmacist. Mentors meet routinely with

students to discuss aspects of professional development such as academic, social, physical, and mental well-being. By reviewing and discussing the instrument, mentors will be able to further assist students in PIF by addressing the qualities and behaviors in which students may struggle with creating a development plan.

Finally, the instrument will be used as an evaluation for SPs to provide formative feedback to student pharmacists when determining their overall evaluation during PBAs. The authors believe this is an appropriate utilization of the instrument as the original qualities and behaviors of practicing pharmacists were developed through a qualitative study from a survey of SPs. This will allow for the students to have an external reference to provide for additional reflective opportunities when conducting self-assessment.

Conclusion

The process through which this instrument was developed and validated included the perspectives of relevant stakeholders including faculty members and SPs. This study found agreement between both groups, indicating that the identified qualities and associated behaviors are appropriate for the development of professional identity in student pharmacists. Through self-assessment and reflection, students will be able to develop their own understanding of the qualities and behaviors they possess as well as opportunities for growth. Through repeated assessment in various learning experiences, students will be able to develop their own understanding and definitions of qualities and behaviors of exceptional practicing professionals. While this study was able to identify 14 qualities and associated behaviors of practicing pharmacists, the researchers recognize that the elements that encompass professional identify are constantly evolving. This instrument provides a framework that students can utilize to further refine their own vision of professional identity as they transition into their practitioner role.

Figure 1: Self-Assessment Instrument

Quality	**Behavior**	**Likert Rating**
Appearance/Hygiene	Displays appropriate dress within the expectations of the practice setting; appears neat, well-groomed, and "put together"; avoids use of fragrances; practices cleanliness	0 = Never 1 = Almost Never 2 = Sometimes 3 = Almost Always 4 = Always
	Justification for Rating:	
Attentive	Listens actively, appears open/receptive to the interaction, maintains appropriate eye contact, displays a welcoming demeanor	0 = Never 1 = Almost Never 2 = Sometimes

		3 = Almost Always 4 = Always
	Justification for Rating:	
Caring/Empathic	Demonstrates compassion, puts the patient/caregiver at ease, responds to patient/caregiver questions/concerns, displays a comforting temperament	0 = Never 1 = Almost Never 2 = Sometimes 3 = Almost Always 4 = Always
	Justification for Rating:	
Confident	Appears self-assured and secure, demonstrates self-efficacy	0 = Never 1 = Almost Never 2 = Sometimes 3 = Almost Always 4 = Always
	Justification for Rating:	
Genuine	Appears honest and authentic, displays integrity and a sincere persona	0 = Never 1 = Almost Never 2 = Sometimes 3 = Almost Always 4 = Always
	Justification for Rating:	
Knowledgeable	Demonstrates subject familiarity and competence, knows the content, gives accurate recommendations	0 = Never 1 = Almost Never 2 = Sometimes 3 = Almost Always 4 = Always
	Justification for Rating:	
Organized/Time Management	Collects and delivers information in a complete, concise, deliberate, and efficient manner; respects the person's time	0 = Never 1 = Almost Never 2 = Sometimes 3 = Almost Always 4 = Always
	Justification for Rating:	
Personable/Positive Attitude	Displays a cheerful, friendly, and upbeat disposition as appropriate to the situation; acts in a supportive, affirming, and helpful manner; responds to resistance with empathy and open-ended exploration	0 = Never 1 = Almost Never 2 = Sometimes 3 = Almost Always 4 = Always
	Justification for Rating:	
Person-Centered	Demonstrates inclusiveness; includes the patient/caregiver throughout the encounter; tailors the interaction to the patient's needs; remembers	0 = Never 1 = Almost Never

	the person's name; uses person-first language; acts in a way that is accepting, nonjudgmental, and unbiased towards all individuals	2 = Sometimes 3 = Almost Always 4 = Always
	Justification for Rating:	
Prepared	Displays readiness for engaging in a variety of situations, demonstrates familiarity with the latest technology and systems needed to serve patients/providers/others	0 = Never 1 = Almost Never 2 = Sometimes 3 = Almost Always 4 = Always
	Justification for Rating:	
Presentation/Delivery	Engages and captivates the audience, utilizes appropriate body language (open posture and non-distracting mannerisms), and rate of speech conducive to the situation	0 = Never 1 = Almost Never 2 = Sometimes 3 = Almost Always 4 = Always
	Justification for Rating:	
Professional	Adheres to the code of conduct of the profession, practices within ethical standards, recognizes their value within the healthcare team, engages in continuous professional development	0 = Never 1 = Almost Never 2 = Sometimes 3 = Almost Always 4 = Always
	Justification for Rating:	
Respectful/Polite	addresses others with dignity, courtesy, and consideration; well-mannered	0 = Never 1 = Almost Never 2 = Sometimes 3 = Almost Always 4 = Always
	Justification for Rating:	
Verbal Communication	Utilizes clear enunciation, appropriate terminology, and plain language; speaks with appropriate tone and volume; well-spoken	0 = Never 1 = Almost Never 2 = Sometimes 3 = Almost Always 4 = Always
	Justification for Rating:	

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